

METHOD AND APPARATUS TO PRODUCE GAS PHASE ANALYTE IONS

This application claims benefit of Provisional App. 60/271,709 filed Feb. 28, 2001.

FIELD OF THE INVENTION

This invention relates to desorption and ionization methods and apparatuses to produce gas phase ions for subsequent analysis. More particularly, it relates to ionization of gaseous analytes subsequent to adsorption of the gaseous analyte to an ionization surface.

BACKGROUND OF THE INVENTION

This invention generally relates to methods and apparatuses for the adsorption, desorption, and ionization of an analyte for analysis of the ionized analyte by such analytical methods as, for example, mass spectrometry.

How analytes are ionized depends on the volatility of the analyte. That is, volatile analytes are typically ionized into the gas phase, by methods such as electron ionization (EI), chemical ionization (CI), or photoionization by lasers. Involatile analytes are either desorbed from surfaces by energy input or desorbed in liquid sprays and detected as ions. Desorption from surfaces occurs in methods such as laser desorption (LD), secondary ion mass spectrometry (SIMS), and matrix-assisted laser desorption (MALDI). Desorption from liquid sprays occur in methods, such as electrospray (ES) and thermospray (TSP).

These methods of analyte ionization produce a variety of both positive and negative analyte ions. Positive ions include molecular ions (M^+), protonated molecules (MH^+), cationized molecules ($A^+(M)$), and various fragment ions (F_i^+). Negative ions include molecular ions (M^-), deprotonated molecules ($(M-H)^-$), anionized molecules ($X^-(M)$), and fragment ions (F_i^-).